

What is claimed is:

1. A heat pipe having at least one diamond element through which at least a portion of heat flowing into or out of the heat pipe passes.

2. A heat pipe having multiple diamond elements through which at least a portion of heat flowing into or out of the heat pipe passes.

3. A heat pipe having at least one diamond element through which at least a portion of heat flowing into or out of the heat pipe passes wherein (the heat source) is an electronic device.

4. A heat pipe having multiple diamond elements through which at least a portion of heat flowing into or out of the heat pipe passes, wherein (the heat sources) are electronic devices.

5. A heat pipe having at least one diamond element through which at least a portion of heat flowing into or out of the heat pipe passes, (the principal function) of the heat pipe being to improve thermal uniformity within (the heat source).

6. A heat pipe having multiple diamond elements through which at least a portion of heat flowing into or out of the heat pipe passes, (the principal function) of the heat pipe being to improve thermal uniformity within and among (the heat sources).

7. A method for fabricating a heat pipe comprising:
preparing a mandrel for diamond deposition by inducing nucleation thereon;
depositing diamond on said mandrel by chemical vapor deposition along substantially its entire length;
removing said mandrel to form a diamond tube having first and second ends;
preparing said first and second ends of said diamond tube for attachment of end caps;
attaching a first end cap over said first end of said diamond tube;
affixing into said diamond tube a bundle of clean, fine wires of individual diameter not more than 0.01" each wire having a length of between about 95% and about 100% of the length of said diamond tube, said bundle having an aggregate cross-sectional area occupying between 10% and 75% of an inner diameter of said diamond tube;
charging said diamond tube with heat exchange fluid; and
attaching a second end cap over said first end of said diamond tube.

8. The method of claim 7 wherein preparing said first and second ends of said diamond tube for attachment of end caps comprises metallizing said first and second ends.

9. The method of claim 8 wherein metallizing said first and second ends comprises metallizing to a length on the outer diameter of said diamond tube of at least 5mm from each of said first and second ends.

10. The method of claim 9 wherein metallizing said first and second ends comprises depositing titanium directly on said first and second ends, depositing platinum over said titanium, and depositing gold over said platinum.

11. The method of claim 10 where said titanium has a thickness in the range of about 200 Angstroms, said platinum has a thickness in the range of about 1,000 Angstroms, and said gold has a thickness in the range of about 10,000 Angstroms.

12. The method of claim 7 wherein attaching said first end cap and said second end cap is accomplished by a method chosen from brazing and soldering.

13. The method of claim 7 wherein charging said diamond tube with heat exchange fluid comprises charging with distilled water.

14. The method of claim 7 wherein charging said diamond tube with heat exchange fluid comprises charging with an amount of fluid equal to between about 1/6 and 1/3 the inside volume of said diamond tube.

15. The method of claim 7 wherein said clean, fine wires are formed from molybdenum.

16. A method for fabricating a heat pipe comprising;
forming a rectangular heat pipe having two widened end regions presenting at least one planar surface;
forming a hole into said planar surface;
forming a diamond wall element consisting of a solid slab of diamond having one major face of this diamond element metallized to accept solder or braze attachment; and
attaching said diamond wall element around a periphery of said hole.

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